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How European is the European Central Bank's monetary policy?

Estimating the differential impact of the ECB's interest rate policy on the Eurozone states

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Ever since its establishment in 1999, the European Central Bank worked on maintaining relative price stability mainly through inflation targeting. The ECB aims at a target inflation rate below but close to 2%. However, the diversity among the member states in the European Union and the Eurozone requires not only collective attention on the EU economy but also on each individual member state. Some Eurozone member states experience generally higher levels of inflation and higher unemployment. On the other side are countries like Germany which are more concerned with maintaining low inflation only. Many economists and politicians criticize the ECB for its monetary decision-making, which affects various member states differently and could drive their economies out of alignment (Salvatore, 2002).

The literature on the topic suggests a theory also known as the German Dominance Hypothesis (GDH), which explains the prevailing role of Germany and German's economic objectives on the ECB decision-making process. The main purpose of this paper is to study the reasoning behind this commonly spread criticism of the European Central bank and test if the ECB's monetary policy is beneficial for the Eurozone members as a whole or only for a select group of countries, which have similar economic profiles. Or in other words, the paper establishes the differential impact of the ECB monetary policies on the Eurozone member states with the expectations that the policy will benefit mostly the German economy and other economies with similar low-inflation targeting needs and will negatively impact others, which face high unemployment rates, in general.

I. Introduction

The United States of Europe, more often referred to as the European Union (EU), were first united shortly after World War II in an attempt to establish long-term peace and trade relations between the former war enemies, France and Germany. Soon, more countries joined the European Community and formed the entity now known as the European Union. The EU today consists of 27 member states. Its main goals are political and economic stability through a unified political system and one free market for goods and labor. The more the Union expanded the more urgent became the need for a unified currency. Thus, in 1999 the EU created the euro and established the European Central bank (ECB), considered by many the most significant event in international finance since WWII. For the first time a group of sovereign nations voluntarily gave up their national currency and monetary policy for a common European one, the euro (Salvatore, 2002). The first to accept the euro were Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain in 1999 followed by Greece in 2000 (European Central Bank, 2010).

Ever since its establishment in 1999, the European Central Bank has worked on maintaining relative price stability, mainly through inflation targeting. The ECB aims at a target inflation rate below but close to 2%. However, the diversity among the member states in the European Union and the Eurozone requires not only collective attention on the EU economy but also careful consideration of each individual member state. Some Eurozone member states experience generally higher levels of inflation and higher unemployment. For them inflation targeting policy may not be the best choice. On the other side are countries like

Germany which have relatively low unemployment levels in comparison to other countries and therefore are more concerned with maintaining low inflation. The German inflation rate is the lowest among the 12 Eurozone countries. (European Central Bank, 2010). Many economists and politicians criticize the Union's Central Bank for the process of monetary decision making in such a large and diverse single-currency area as the European Monetary Union (EMU). These decisions affect various member states differently and could drive their economies out of alignment (Salvatore, 2002).

The main purpose of this paper is to study the reasoning behind this common criticism of the European Central bank and test whether the ECB's monetary policy is beneficial for the Eurozone as a whole or only for a select group of countries that have similar economic profiles. The paper investigates whether Germany and other countries from the Eurozone with similar economic conditions experience less stress due to their voting power or size advantage.

The paper proceeds as follows. Section II describes in depth the background of the project as revealed in the literature. Section III outlines the empirical model and the econometric methods employed. Section IV describes the data. Furthermore, Sections V presents the results of the paper. Lastly, Section VI concludes the paper with implications and suggestions for future research.

II. Literature Review

Background

The European Central Bank (ECB) is at the core of the central banking system known

as the European System of Central Banks (ESCB). The ESCB consists of all 27 EU member National Central Banks and the ECB. All 27 National Central Banks report their economic performance and recommendations to the ECB. However, only the Eurozone member states – those which have adopted the euro – actively participate in the monetary policy decision-making.

Within the European banking system decisions are made by the Executive Board, the Governing Board and the General Council. The Executive Board consists of a President, a Vice President, and four Board members from Eurozone states. The Governing Board consists of national governors from the Central Banks of the countries in the Eurozone. The Governing Board's responsibilities include adopting guidelines and performing tasks entrusted to the Eurosystem. It also formulates monetary policies for the Eurozone including decisions relating to monetary objectives, key interest rates, the supply of reserves in the Eurosystem, and the establishment of guidelines for the implementation of these decisions. The General Council consists of all 27 governors of national Central Banks in the EU and the President and Vice President of the ECB. Some of the key responsibilities of the General Council are to contribute to the ECB by providing advisory recommendations, collecting statistical information, preparing the ECB's annual reports, and participating in determining exchange rates among the non-Eurozone member states. The General Council will be dissolved once all European Union member states join the Eurozone and adopt the euro (European Central Bank, 2010).

The creation of such a complex Eurosystem expands on the already established national central bank systems and simultaneously respects the national political and cultural diversity among the Eurozone member states. The most important decision-making bodies

within the system are the Executive Board and the Governing Board.

Stress level indicator

The stress in a particular country is defined in previous literature as the difference between the country's actual short-term interest rate and the optimal interest rate if the country had an independent monetary policy. The actual monetary policy is set by the European Central Bank through its short-term interest rate. The optimal monetary policy is calculated using a variant of the Taylor rule. The Taylor rule is a macroeconomic tool which takes into account countries' specific inflation and output data and estimates the optimal interest rate for the country. The Taylor rule was first used to estimate the optimal interest rate for the U.S. Since then researchers have estimated variants of the tool that work for the European Union and the ECB's monetary policy (Bernanke, 2010).

One study which deals with applications of the Taylor rule for the European Central Bank is Flaig and Wollmershaeuser (2003). They find that the stress in Germany is close to zero for the period between 1999 and 2005. Their main results suggest that stress in the Eurozone is a result of the different trend growth rates and the very low interest rates for the period examined. (Flaig and Wollmershaeuser, 2007). In order to find the optimal interest rate for each country, they use a modified Taylor rule. It includes a smoothing term and allocates various weights to output and inflation depending on the model specifics that the authors investigate. Sauer and Sturm also use the Taylor rule to explain the ECB's monetary policy. In their study on the ECB monetary policy, Sauer and Sturm give a comprehensive list of previous studies on the Bundesbank and the European Central Bank, which estimate the

Taylor rule coefficients.

The cause of high stress for some Eurozone members and low stress for others is the European Central Bank's choice of actual monetary policy. If the ECB chooses a monetary policy which is close to a country's Taylor rule optimum then that country experiences low stress. If the ECB chooses a monetary policy diverging from a country's optimum then that country experiences high stress. Therefore, it is crucial to know the factors influencing the ECB's choice and their impact on individual countries and on the entire Eurozone.

German Dominance Hypothesis

The literature identifies several hypotheses regarding the choice of monetary policies. One of them known as the German Dominance Hypothesis (GDH) posits that Germany has a prevailing role in the decision-making process in the European Central Bank. First of all, there are multiple similarities between the ECB and the Bundesbank, such as shared monetary policy objectives. The ECB has even been named "twin sister of the Bundesbank" mostly because it was initially modeled on the German central bank (Debrun, 2001). Furthermore, the structure of the main decision-making process includes three decision making bodies within the ECB: the Governing Board, the Executive board and the General Council. Germany has had a representative on the Executive board ever since the ECB's establishment. Also, it is part of the Governing Board and General Council. The German Dominance Hypothesis claims that the decisions made by the ECB are influenced by the prevailing voting power of Germany as the biggest economic force in the Eurozone. Even though such dominance is against the official principles of the ECB, in reality some countries

in the EU may have more influence compared to others. Heinemann and Huefner, for example, find German dominance present in the Eurozone using a Taylor rule estimation procedure for the period from the ECB establishment to 2002.

Based on previous literature and the notion that the ECB cannot possibly accommodate the monetary needs of all Eurozone member states, this paper investigates the discrepancies between ECB monetary policies and German monetary "expectations." If the GDH holds true for the time period under investigation then Germany and other countries with similar macroeconomic profiles would experience lower stress levels. Using the Eurosystem decision-making structure as the basis for the empirical model, the paper investigates whether Germany and like countries experience less stress.

Voting System

This paper looks into two aspects of the voting system in the ECB. On one hand, literature presents the "one country one vote power" theory which opposes the German Dominance hypothesis. On the other hand, the structure of the ECB presents a problematic extra vote that some countries have because they are represented on the Executive Board. Berger and Haan (2002) argue that the current voting system in the EU both on a political and ECB level suggests an over-representation of small countries versus larger ones. This is known as the "one country one vote power" theory. For example, Germany has only one vote on the Governing Board, the same as Luxembourg and Belgium. Unless represented on the Executive Board each member has exactly one vote. Thus, some authors have suggested that smaller Eurozone members are over-represented. (Berger and Haan, 2002). The "one

country one vote" theory also suggests that larger economies experience higher stress levels due to the uneven balance between their GDP size and their voting power. If this theory holds then Germany and the other countries alike would experience greater stress levels as compared to smaller economies in the Eurozone .

Furthermore, the voting structure of the ECB suggests an additional variable that tests for the amount of actual voting power in the model is crucial for accounting for the political aspects of the topic under consideration. Such a variable would account for a country's representation on the Executive Board. Each country in the Eurozone has one vote in the General Council, which is used for making important monetary decisions such as interest rate changes. However, some countries have an additional vote because they have a representative on the Executive Board. Even though there is no country with an explicit permanent seat on the Executive Board, it is clear from the ECB's past that Germany, France, Italy, and Spain have always been represented on the Executive Board. Thus, accounting for the Executive Board representation of certain member states is important. If a country is represented on the Executive Board then it has a total of two votes which implies more influence in the decision-making process. As a result countries on the Executive Board experience lower stress levels.

Political Factors: Economic Freedom Index

Lastly, several studies look into political factors influencing macroeconomic divergence and the ECB's decision-making process. Berger and Haan investigate the risk of national considerations prevailing over Eurozone considerations. They find that the ECB

decision-making includes not only economic factors but also political differences across countries. Another paper investigating political instability and inflation volatility uses a set a political factors in order to determine their impact on the inflation changes (Aisen and Veiga, 2006). They use the index of economic freedom as a measurement of political stability and more flexible regulation. They find that political stability is a key driver for the policy-makers in developing countries and should be considered more carefully for long-run economic prosperity. The theory on economic freedom posits that countries which are generally more economically free experience less stress in their monetary policy decision-making. The higher the index of economic freedom the more politically free the country is and the less stress levels it experiences.

III. Empirical model

The empirical estimation of such stress indicators requires the implementation of a macroeconomic tool well-known as the Taylor rule. It is used to estimate the country's optimal interest rate in order to calculate each country's individual stress level. The Taylor rule was first developed for the Federal Reserve's interest rate estimation by John Taylor of Stanford University but has since been used in multiple studies of the ECB (Bernanke, 2010).

The Taylor rule is presented in equation (1.1):

(1.1) $i_{it} = \pi_{it} + r_{it}^* + a_{\pi}(\pi_{it} - \pi_t^*) + a_Y(Y_{it} - Y_t^*).$

It is used to estimate the optimal short-run nominal interest rate given a set of economic conditions. In this equation, r_{it}^* is the assumed nominal interest rate for each country and π_{it} is the inflation rate in each of the Eurozone member states. The other two expressions represent

the difference between actual and target inflation in the EU and the difference between actual and potential output. The outcomes of the Taylor rule depend on the weight allocated to inflation and output gaps as well as the way those variables are measured. In his recent speech, Bernanke points out that the difficulties in measuring the output gap in real time are well known and that the choice of inflation may also be crucial for the Taylor rule implementation (Bernanke, 2010). The Taylor rule has been successfully applied in the past and worked equally well for both the Federal Reserve and the European Central Bank (Grauwe, 2002 and Gorter, 2008).

In practice, it is more common for central banks worldwide to move interest rates in small steps without reversing direction quickly. In order to account for this so-called smoothing, Equation (1.2) is used as a reaction function of the Taylor rule:

(1.2) $i_{it}=(1-\rho)a + (1-\rho)(g_{\pi}\pi_{it}+g_{y}Y_{it}) + \rho i_{t-1}+\varepsilon$

In this equation, g_{π} and g_{y} are the estimated weights on inflation and output gap and ρ is the smoothing parameter. The role of the smoothing parameter is to account for gradual changes in interest rates and to estimate more accurate optimal interest rates.

Sauer and Sturm provide a comprehensive comparative table of such reaction function coefficients based on the various existing estimates in previous literature. For reasons of data compatibility, this paper focuses on three main studies by Ulrich (2003), Gerdesmeier and Roffia (2003), and Fourcans and Vranceanu (2002). Since the purpose of this paper is not to estimate the Taylor rule coefficient but to apply the rule in a model accounting for the discrepancies in the decision-making process we use the estimated weights and coefficients as provided by these three studies. Once the interest rates are calculated, a stress level is

estimated as the difference between the optimal and actual interest rates. Each of the estimated stress levels is used as the dependent variable in the model and is called respectively Stress 1, Stress 2, and Stress 3. Stress 1 and Stress 3 are calculated with allocating equal weight on the output gap. While the Stress 2 model allocates almost twice as much weight on the output gap. Among the three calculations, Stress 2 has the lowest weight on the inflation gap and Stress 3 allocates the highest weight respective to the other two calculations. Table 1. shows the correlation among the three stress levels. Each of the three stresses is calculated with coefficients from the three major studies on the topic discussed earlier. The results in the table establish that the three methods yield very similar measures of stress.

Table 1. Stress level correlations:

	Stress 1	**Stress 2**	**Stress3**
Stress 1	1.0000	0.9965	0.9912
Stress 2	0.9965	1.0000	0.9981
Stress 3	0.9912	0.9981	1.0000

Several studies on the topic of national divergence in the Eurozone suggest the importance of considering political factors influencing the stress indicators (Berger and Mueller, 2004; and Berger and Haam, 2002). Such political factors are voting power of the member states, Executive Board representation, Economic Freedom and GDP weight of the countries. In addition, the paper suggests that certain country representatives could reflect their national party interests when deciding on a European level and thus affect the ECB

decision-making process. Party conflicts or general national political instability could result in imbalance in the voting and decision-making. However, the lack of information on individual member state party stability prevents us from including this variable in the model.

The following equation represents the model:

$$Stress_{it} = \alpha + \beta * Executive\ Board_{it} + \gamma * Economic\ Freedom_{it} + \delta * GDP\ weght_{it} + \varepsilon_{it}$$

The variables and their expected signs are:

- *Stress*$_{it}$ (dependent variable) – A country's individual stress indicator, calculated as optimal interest rate minus actual interest rate;

- *Executive Board*$_{it}$ (-) – A country's voting power, based on the number of votes. Countries with more votes have more influence and as a result lower stress. This is a dummy variable with values 0 if the countries do not have representation on the Executive Board and 1 if they do.

- *Economic Freedom*$_{it}$ (-) – A country's index of economic freedom, used to measure political stability. More politically free countries have higher economic freedom indexes which would reflect into a lower stress level.

- *GDP weght*$_{it}$ (+/-) – A country's GDP weight in the Eurozone: There are two contradicting theories which need to be considered when determining the sign of this variable. On one hand, as suggested by the GDH, the larger the size of the economy the more influence and the less stress that country experiences. On the other hand, the "one country, one vote theory" tends to allocate disproportionate power to

smaller countries. As a result larger GDP weight might result in more stress based on the imbalance of votes.

IV. Data

The data for the empirical tests come from the European statistical database also known as EUROSTAT. For the estimation of the regression model we construct a panel consisting of 11 European Union member states over a period between 2000 and 2007. The Eurozone currently consists of 16 member states, four of which joined in 2007, 2008, and 2009. These last four members are all small Eastern European countries, which might cause a statistical bias in the results because these countries were not in the Eurozone or in the Union in the early years of the ECB. Insufficient data for Portugal required taking it out of the list of countries under consideration. Preliminary tests suggest that the data during 2008 and 2009 should be omitted because during the recent financial crisis, the ECB policies were completely atypical. Thus, the paper looks at the "oldest" 11 members of the Eurozone (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, and Spain) using data with monthly observations for the period between 2000 and 2007.

The observations for inflation and interest rates are on a monthly basis. Since the GDP data are complied on a quarterly basis, this study follows other researchers in using industrial production for an output estimate (Heineman and Huefner, 2004). Industrial production is available on a monthly basis and is used for calculating the output gap in the Taylor rule reaction function. The potential industrial production is estimated using a Hodrick-Prescott

filter. The Hodrick-Prescott filter is a mathematical tool commonly used in obtaining a smoothed non-linear representation of time-series data. Most previous studies estimating a Taylor rule reaction function use the Hodrick-Prescott filter to smooth their industrial production while calculating the output gap. In order to estimate the inflation gap in the Taylor rule we use the inflation target rate which is set in the ECB's objective and is 2%. The data for the Index of Economic Freedom come from the Annual Reports of Economic Freedom of the World. Voting power data are obtained from the European Central Bank website. The total number of observations is only 847 because the data set eliminates any missing cases.

Table 2. Descriptive Statistics:

	Stress1	**Stress 2**	**Stress 3**	**Executive board**	**Economic Freedom**	**GDP weight**
Predicted sign	Dependant variable			-	-	+/-
Mean	1.07	0.61	1.44	0.58	69.76	0.09
Median	1.26	0.76	1.66	1.00	69.70	0.04
Std. Dev.	4.05	2.59	6.47	0.49	6.64	0.09
Observations	847	847	847	847	847	847
Cross sections	11	11	11	11	11	11

Table 2. shows the descriptive statistics of the variables in the model along with their predicted sign. Stress 1, Stress 2 and Stress 3 are the dependent variables as calculated by the Taylor rule with three sets of coefficients. The Executive board variable is an independent variable which controls for the voting power in the Eurozone. It is a dummy variable with values of 1 if the country has a representative on the Executive board and 0 if it is not

represented on the Executive Board of the Governing Council. According to previous literature, if a country is represented on the Executive Board and has more votes it experiences lower stress levels. The Economic Freedom is the independent variable which controls for other political factors such as political and economic freedom. It is measured by the Index of Economic Freedom. The more politically and economically free the country is the lower the stress it experiences. Lastly, the GDP weight is the independent variable which controls for the GDP size of the countries and their respective weight in the Eurozone. The sign of this variable depends on two opposing theories. On one side we have the German Dominance Hypothesis which suggests that larger economies experience lower stress levels. On the other side, we have the "one country one vote power" theory which suggests that smaller countries are generally overrepresented in the Governing Council respective to their GDP size. In this scenario, the smaller the country the smaller the stress levels it experiences.

V. Results

After careful calculations using the Taylor rule, three different stress levels are estimated for the 11 member states over the period between 2000 and 2007. Each of them is regressed with the independent variables as presented in the model equation. Table3 represents the results from the regressions using a panel data set with a total of 847 observations accounting for fixed effects:

Table 3. Results:

Variable	Stress 1	Stress 2	Stress 3
Constant	14.26**	8.15*	17.61*

	(5.66)	(3.68)	(9.22)
Executive Board	3.65**	2.26**	5.49**
	(0.36)	(0.23)	(0.11)
Economic Freedom	-0.12**	-0.068*	-0.13
	(0.06)	(0.04)	(0.59)
GDP weight	-79.98*	-47.14*	-117.58*
	(39.37)	(25.53)	(63.98)
Fixed Effects:			
Austria	-7.00	-4.15	-10.33
Belgium	-3.55	-2.02	-5.04
Finland	-9.45	-5.67	-14.29
France	6.92	3.60	9.38
Germany	12.83	7.46	18.62
Greece	-3.96	-2.19	-6.07
Ireland	0.86	0.69	1.12
Italy	5.00	2.97	7.67
Luxembourg	-2.57	-1.36	-3.81
Netherlands	-1.32	-0.74	-1.79
Spain	2.23	1.41	3.58
Sample size:	847	847	847
R-squared	0.476	0.458	0.452

* Significance levels at 0.05
**Significance levels at 0.01

The Executive Board variable, which represents the voting power of the countries in the Eurozone shows significant results. The results are significant at 0.01 levels in all three models suggesting the importance of Executive Board representation in the monetary policy decision-making. However, the sign of the coefficient is consistently the opposite of what theory suggests. If a country is represented on the Executive Board then it experiences stress levels higher by 3.65 percentage points in the Stress 1 model, 2.26 in Stress 2, and 5.49 in Stress 3. The results show that countries which are represented on the Executive Board experience larger stress levels than those not on the Executive Board. Part of the explanation could be

found in the European Central Bank's main principles which claim that Executive Board representatives serve the ECB and should withhold their national interests in favor of the general Eurozone interests. Further investigation of the voting power is necessary for better understanding the implications of voting power imbalance in the ECB.

The next important independent variable is the Economic freedom index which shows the correct signs as predicted by theory. Unfortunately, the results for the index are not consistently significant throughout the three different models. As shown in Table 3, in the first model with stress levels calculated with Ulrich's coefficients, the index of economic freedom is significant at 0.01 levels confirming finding from literature. On the other hand, the results for the other two models calculated using coefficients from respectively Gerdesmeier and Roffia (2003) and Fourcans and Vranceanu (2002) are significant at 0.05 levels or not significant at all. Despite the variation in significance of the results, the consistency of the coefficient sign suggests that theory on the impact of political factors holds true for the countries and period under investigation. The Index of Economic Freedom is measured on a scale of up to 100. The more economically free the country the higher its Economic Freedom index. The results suggest that a 1 percentage point increase in economic freedom would result in a decrease between 0.068 and 0.13.

The results for the GDP weight of the countries are consistently significant at 0.05 levels. They maintain the correct sign supporting the German Dominance Hypothesis. Countries with larger GDP weight in the Eurozone tend to have more influence in the union and experience lower stress levels. In Stress 1 and Stress 3 models, the results show that a 1 percentage point increase in the GDP weight of a country is reflected by a 79.90 percentage points decrease

and 117.58 percentage points decrease, respectively. The numbers for Stress 2 model look drastically different. A one percent increase in GDP weight would result in only 47.14 percentage point decrease in stress levels.

The differences among the three models can be partially explained by the calculation methodology. Stress 1 model is calculated by allocating more weight on output divergence in the optimal interest rate calculation and less weight on inflation. Stress 2 and Stress 3 models allocated less weight on output. However, Stress 3 allocated almost twice as much weight on inflation as the Stress 2 model. Despite the differences in the calculation method, the GDP weight variable shows important implications of the German Dominance Hypothesis. Larger economies experience significantly lower stress levels respective to their GDP weight in the Eurozone, which reaffirms the GDH.

Lastly, the fixed effects results shown in Table 3 are interesting. Each coefficient represents country effects not captured in the preceding explanatory variables. Germany, which gets the greatest reduction in stress due to its GDP weight, has the largest counteracting country effect. Overall, the larger economies tend to have the largest positive country effects, meaning that something is increasing stress. And the smaller economies tend to have the largest negative country effects, meaning something is reducing stress. A possible hypothesis for future research is that the effect of GDP weight is nonlinear, so that it overstates the effect of GDP weight at the extremes.

VI. Conclusion

The European Central Bank and its monetary policy decision-making have often been

criticized for their undemocratic principles. Previous studies suggest that Germany has a prevailing role in the Eurozone and significant impact on the decision-making process which favors its own macroeconomic stability.

This paper aims at investigating various political factors along with countries' size in the Eurozone which affect the stress levels they experience. The results support the German Dominance Hypothesis which suggests that Germany and other larger economies have greater impact on the decision-making process and experience lower levels of stress. In addition, the indexes of economic freedom results also confirm the theory that politically free and stable countries such as Germany and France tend to have smaller stress levels. However, the results suggest that presence on the Executive Board does not necessarily favor countries and does not result in lower stress levels. According to the regression analysis, countries represented on the Executive Board tend to experience higher levels of stress. Further analysis of the voting power and implementation of a better measurement of voting power is important for the thoroughness of the analysis.

Several problems can be identified with regard to the estimation methodology. First of all, the Taylor rule is still the best available estimation tool to calculate the optimal interest rates a Central Bank could implement. However, various studies in the field outline multiple problems with this estimation procedure. The Taylor rule is criticized for not being applicable for the monetary policy analysis of the European Central Bank (Sauer and Sturm, 2003). In addition, as stated by Bernanke (2010) in his recent speech, the methodology used to calculate the variables and the data used for each variable makes a difference in using the Taylor rule efficiently. As a result, finding an alternative procedure for estimating optimal

interest rates in future research could improve the quality of the calculated stress levels. Second, the paper uses a Hodrick-Prescott filter as a mathematical tool to smoothen the time series data for the industrial production. This procedure has also been criticized for its applicability in data analysis and its implementation when used in the Taylor rule calculations. Lastly, some of the data used to measure the influence of multiple political factors can be improved by using better quantifiable measurements. Unfortunately, there are no good data available that account for various political aspects of ECB's monetary policy decision-making such as a variable accounting for political party stability in the countries of the Eurozone.

Future research on the topic requires more careful analysis of the estimation methodology and expansion of the variables accounting for political factors. In addition, accounting for a non-linearity for the GDP weight in the model could improve the quality of the model. Last but not least, estimation of the actual Taylor rule coefficients for the actual period of investigation using the data available can improve the results and quality of the research presented in this paper.

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